IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	Rosen	)	PATENT APPLICATION
		)	
APPLICATION NO.:	09/775,025	)	Group Art Unit:
		)	
FILED:	02/01/00	)	Examiner: Oh, Taylor V
		)	
FOR:	LOW TEMPERATURE PURIFICATION OF NAPHTHALENE DICARBOXYLIC ACIDS	)	Attorney Docket No.: 38,097

Request for Reconsideration under 37 C.F.R. § 1.111

Commissioner
for Patents
Washington, D.C. 20231

CERTIFICATE OF MAILING

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE WITH SUFFICIENT POSTAGE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231
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CAROL A. WILSON
(Typed or Printed Name of Person Signing Certificate)

Sir:

This is in response to the Office Action mailed on 03/27/2002 (hereinafter referred to as "Office Action"). Applicant respectfully requests reconsideration of this application in light of the following remarks.

Claims 1-20 of this application were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sikkenga et al. (U.S. Pat No. 5,256,817) in view of Partenheimer et al. (U.S. Pat. No. 5,081,290). Applicant respectfully submits that the rejection under 35 U.S.C. § 103(a) should be withdrawn because a temperature of from about 520 to 575 °F for purification of a naphthalenic carboxylic acid, as recited in Applicant's Claim 1, produces unexpected results.

Sikkenga et al. teaches purification temperatures of at least about 500 ° F with temperatures above 600 °F most preferable.[1] As taught by Applicant, it is generally believed that naphthalenic acids are preferably purified above 600 ° F to increase the

[1] See Sikkenga et al. at col. 7, l. 58-68.

ANY ADDITIONAL FEES REQUIRED
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NO. 01-0528

amount of dissolved solids present in the reactor feedstock.[2] Similarly, Sikkenga t al. expr sses a preference for purification temperatures above 600 ° F because of the increased solubility of naphthalenedicarboxylic acid.[3] In contrast, Applicant has surprisingly discovered that not only are lower purification temperatures (about 520-575 °F) equally effective for purification, but lower purification temperatures significantly lower amounts of undesirable impurities such as 6-Me-2-NA and 2,6-DCT.

Applicant's unexpected discovery is exemplified in the comparison of Table 1B and Table 2 found in applicant's specification. Table 1B shows an analysis of a purified 2,6-NDA product made with a purification temperature of 600 ° F. Table 2 shows an analysis of a purified 2,6-NDA product made under similar conditions as Table 1B except that a purification temperature of 525-565 ° F was used. Below is a comparison of impurities listed by Table 1B and Table 2.

Impurity	Amount of Impurity (as ppmw of Total Solids)	
	Higher Purification Temp.	Lower Purification Temp.
6-formyl-2-napthoic acid ("FNA")	23	Not detected <8 ppmw
1-bromo-2,6-naphthalene dicarboxylic acid ("BrNDA")	not detected <20 ppmw	not detected <20 ppmw
2-napthoic acid ("2-NA")	106	124
6-methyl-2-napthoic acid ("6-Me-2-NA")	130	10
2,6-dicarboxytetralin ("2,6-DCT")	488	not detected <10 ppmw
Trimellitic acid ("TMLA")	not detected <10 ppmw	not detected <10 ppmw

As seen above, lower purification temperatures are equally effective for reducing levels of FNA, BrNDA, 2-NA, and TMLA. While this in itself is surprising, it is even more surprising that levels of 6-Me-2-NA and 2,6-DCT are substantially reduced.

Several advantages flow from Applicant's discovery of unexpected benefits of lower temperatures (about 520-575 ° F) for purifying a naphthalenic acid. One advantage, set forth above, is the improved reduction of impurities such as 6-Me-2-NA and 2,6-DCT. Another advantage is the cost savings realized by: 1) avoiding the required substantial investment in plants capable of withstanding pressures necessary to operate at higher purification temperatures (greater than 600 ° F); and 2) avoiding the large investment in energy to heat reaction mixtures to higher purification temperatures.[4] Furthermore, when compared with higher purification temperatures, lower purification

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[2] Se Applicant's specification at page 4, lines 10-15.

[3] See Sikkenga et al. at col. 7, l. 65-69.

[4] See Applicant's specification at page 3, lines 1-8.

temperatures (about 520-575 ° F) result in a product having improv d purify, .g. reduced amounts of 6-Me-2-NA and 2,6-DCT. Thus a two-fold advantage flows from Applicant's discovery of unexpected benefits of lower purification temperatures: th coupling of lower operating costs with improved product purify.

Applicant's unexpected discovery allows purification of naphthalenic acids to a greater degree in facilities previously thought to be unsuitable or undesirable for such work. Use of Applicant's discovery can therefore result in lower capital and energy costs for new plants, or the use of existing facilities such as under-utilized plants for purifying crude terephthalic acid.[5]

Because Applicant has discovered unexpected benefits of lower purification temperatures (about 520-575 ° F) and advantages thereof, Applicant's Claim 1 and it's dependent Claims 2-20 cannot be found obvious over Sikkenga et al. alone or in view of Partenheimer et al. Accordingly, the rejection under 35 U.S.C. § 103 maintained by the Office Action should be withdrawn.

The Office Action cites Partenheimer et al. as describing a process of producing an aromatic dicarboxylic acid via oxidation with a catalyst comprising tin, a Group IVB metal. Applicant respectfully submits that Partenheimer et al. has no relevance because it has no fair teaching or suggestion of using any group IVB metal as a catalyst for purifying a naphthalenic carboxylic acid. The only use of group IVB metals in Partenheimer et al. is for oxidation not purification as recited by Applicant's claims. The Office Action maintains that because Partenheimer et al. teach that tin may be used for the purpose of influencing the rate and selectivity of oxidation, it would have been obvious to have incorporated tin in the oxidation catalyst of Sikkenga et al. for this purpose.[6] Even if such a combination of the prior art was prima facie obvious, the combination would only result in an oxidation process and not a purification process as recited by Applicant's claims. Because the teachings of Sikkenga et al. combined with Partenheimer cannot result in the purification process recited by Applicant's claims, the rejection under 35 U.S.C. 103(a) maintained by the Office Action should be withdrawn.

Applicant now addresses several references considered pertinent to the Applicant's disclosure by the Office Action but not relied upon for any rejection. Norton et al. discloses the purification of naphthalene carboxylic acids comprising heating a solid ammonium salt of said acid but does not teach or fairly suggest purification of a naphthalenic carboxylic acid with a Group VIII noble metal catalyst at a temperature of about 520 to 575 ° F as recited by Applicant's claim 1. Albertins et al. discloses purification temperatures ranging from 80 ° C (175 ° F) to 180 ° C (356 ° F) and does

[5] See Applicant's specification at page 4, lines 15-19.

[6] See Office Action at page 4, 2nd full ¶.

not fairly t ach or suggest a purification temperature of from about 520 to 575 ° F as recited in Applicant's Claim 1. Hayashi et al. discloses a process for producing 2,6-naphthalene dicarboxylic acid by oxidizing 2,6-diisopropylnaphthalene but does not teach or fairly suggest purification of a naphthalenic carboxylic acid with a Group VIII noble metal catalyst at a temperature of about 520 to 575 ° F as recited by Applicant's Claim 1. Codignola discloses a process for the production of aromatic acids but has no disclosure of their purification. Yamamoto et al. discloses a method for purifying 2,6-naphthalene dicarboxylic acid comprising the formation of a dialkali salt thereof but does not teach or fairly suggest purification of a naphthalenic carboxylic acid with a Group VIII noble metal catalyst at a temperature of about 520 to 575 ° F as recited by Applicant's Claim 1.

Applicants respectfully submit that all claims are in a condition for allowance and notice of such is earnestly solicited.

Respectfully submitted,

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